3rd EDITION, CLUJ-NAPOCA
19-22 OCTOBER 2008

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Abstract Details

Abstract Title

Geogenic element behaviour in soil-rainwater interaction at Mt Etna, Sicily: preliminary results.

Abstract Text

Active volcanoes emit considerable amounts of contaminants such as As, Se and V. Previous studies have shown that the volcanic activity at Mt Etna (Sicily) has a strong influence on local rainwater compositions. However to date, the behaviour of trace elements in the soils around Mt Etna is poorly understood. 4-hr batch experiments have been performed with 1:5 soil solutions of air-dried soil (fraction <2 mm) and synthetic (acid) rainwater (using either deionized water with a pH of ~6 or a ~500 ppm of sulphuric acid solution with a pH of ~2). In general trace element concentrations are more enriched in soil solutions with low pH (e.g. enrichment factor (EF) acid compared to neutral soil solution is up to 4.3x102 for V, 2.5x102 for As and 50 for Se). However, it seems that the EF especially for As and V has a correlation with the distance to the crater. Additional, some soils located downwind of the volcano have EFs smaller than 1 (i.e. the elements are more enriched in neutral rainwater), for several elements like V, As and Se. For As and V the EF seems to be vary with distance to the crater. Some possible explanations for these trends will be discussed. These results might have important implications for the chemical composition of the Etnean aquifer, the only water resource to the one million inhabitants around Mt Etna, as well as the bioavailability and therefore potential toxicity through agricultural activities, essential to the local economy.

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Presentation

Contribution proposed for: oral presentation